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MONOGRAPH

ON

IVORY CARVING

BY

CECIL L. BURNS,

ACTING PRINCIPAL OF THE SIR JAMSETJEE JEEJEEBHoy
SCHOOL OF ART, MOMBAY.

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MONOGRAPH ON IVORY CARVING

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CHAPTER I.

COMPOSITION AND VARIETIES OF IVORY.

Ivory is a dental substance, placed by chemists between bone and horn: that variety which is distinguished by the decussating curved lines on the surface of the transverse section of the tusk is peculiar to the African and Asiatic elephants; but the tusks of the walrus, the narwhal, and the hippopotamus, and the teeth of the same animals, also furnish ivory. The tusks of the elephant furnish the chief supply of ivory. In the Great Exhibition of 1851 were a pair weighing 325 lbs. obtained from an animal killed near Lake Ngami, in South Africa: each tusk measured 8 feet 6 inches in length, and 22 inches in basal circumference. It is considered that the tusks deteriorate in length and quality by the domestication of the elephant. African tusks are preferred to the Indian as being denser in texture, and not so liable to turn yellow. The demand for ivory for knife-handles, billiard-balls, keys of musical instruments, mathematical scales, chess-men, for inlaying, for thin plates for miniatures, for carving, and for various other purposes is so enormous, and the supply is so well maintained that surprise may well be felt that the noble race of animals which yield it has not long since become extinct, especially when we consider that the supply of small tusks annually used is so vast as to reduce the average weight of the whole to about 9 lbs. per tusk. Teeth under from 10 to 16 lbs. are called scrivelloes. A few years ago it was calculated that the consumption of ivory in Sheffield alone required the annual slaughter of 22,000 elephants. The collection of broken or shed tusks may somewhat mitigate the zeal of the hunter, and we may also refer to that remarkable source of ivory, which exists in Eastern Siberia and the Arctic marshes, where the tusks of the mammoth, and other animals, are collected in vast quantities, and sold under the name of Siberian or Fossil ivory, although they do not appear to have undergone that species of transmutation implied by the term fossil, but are as useful to the artist or manufacturer as recent ivory. It is not certain whether fossil ivory is imported into this country, although it is extensively used by the ivory-workers in Europe.

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Regarding the elephant's tusk as ivory, properly so called, we may distinguish between African and Asiatic ivory, by the former being, when recently cut, of a mellow, warm, transparent tint, with scarcely any appearance of grain, in which state it is called transparent or green ivory; but as the oil dries up by exposure to the air, it becomes lighter in colour. Asiatic ivory, when newly cut, appears more like the African, which has been long exposed to the air, and tends to become yellow by exposure. The African variety has usually a closer texture, works harder, and takes a better polish than the Asiatic. The teeth, however, of both kinds vary greatly in quality and solidity, so that the choice by the purchaser is always hazardous; he is usually guided by the appearance of the rind, which should be smooth and free from cracks, and of the tip, where the rind is to a certain extent worn away, but it is not until the tusk is cut up that flaws, cracks, and imperfections can be detected. It occasionally happens that the musket ball of the huntsman, which failed to kill the animal, has become embedded in the tusk, and encrusted with a fresh deposit of bony matter, to the great injury of the ivory. Gold and silver bullets have on a few rare occasions been found, showing that the shot was fired by royal hands.

The tusk or tooth, as it is generally called, is usually solid for about half its length, circular or elliptical in section, and free from vessels, or pores such as occur in bone; and although containing a large proportion of lime, it has none of the harsh, meagre character of bone, but admits of exquisite smoothness, and displays all the niceties of the turners' and carvers' art in the slenderest proportions.

CHAPTER II.

PECULIARITIES AND METHODS OF CUTTING IVORY.

Much judgment is required in cutting up a tooth so as to apportion the various parts with economy. The ivory saw is a blade from 15 to 20 inches long, and about the fortieth of an inch thick, set in a steel frame, and tightly stretched, so as to make a very straight cut. The outside strips or spills, as they are called, are used for the handles of penknives; the scraps are burnt for ivory black; and the clean shavings and saw-dust are used for making jelly or size. The mode of cutting up the tooth must of course depend on the uses to which it is to be applied, but in any case it is desirable to mark out the tooth in some way beforehand, and also to pencil out the end of the piece before the saw is used longitudinally. The ivory shrinks in the direction of the length of the tooth, as well as in the width, but much less in the former than in the latter direction. A billiard ball will vary in its diameters, if used, in a room of different temperature to that in which the ivory was kept, so that it is usual to turn the balls roughly to shape, and keep them for some months in the billiard room before the turning is completed.

The thin plates of ivory used for the keys of pianofortes, inlaying, and similar work, are usually cut from the solid block by means of a fine feather-edge veneer saw, in which case there is a considerable amount of saw-dust. The

Russian method of cutting veneers spirally from a cylinder of wood, with a knife of the same length, has been also adopted for ivory, although in such case a reciprocating saw is used, and ivory-dust produced. Mons. Pape of Paris furnishes veneers of this kind as large as 30 by 150 inches, and he has veneered a pianoforte entirely with ivory though the result was not pleasing. In the United States department of the Great Exhibition of 1851 was an ivory veneer 40 feet in length by 12 inches in width.

The following is a description of the method of turning bangles at Tando, Sind :—

The piece of ivory is first peeled and made clean with a hatchet. It is then fixed in a wooden frame specially made for this purpose, the ends of the ivory piece being fastened to two pointed iron bars on each side of the frame, which is called Jandi.

2. The ivory piece is then turned with a wooden shaft attached to a portion of the frame, and is rounded with an instrument having a sharp end, called "Karmno."

The piece is then smoothed with an instrument called Mathni and is marked into lines, round in shape, with an instrument called "Baraki."

The lines so marked are then separated from the piece in different layers with an instrument called "Chhino." The first layer will bring out the largest bangles, the second layer smaller ones, and so on, the bangle of each layer being snatched up with the aid of an instrument called "Putho."

Lastly, the sides of the bangles are smoothed with an instrument called "Kimdho."

It will be seen that the method here pursued is much slower and more crude than that practised in Europe, and that a greater waste of material takes place, no use apparently being made of the small chips and saw-dust. The consequence is that the advantage possessed by the Indian workman in the cheapness of his living and labour over his European fellow-workman is neutralized, and whenever they come into competition the Indian workman goes to the wall.

CHAPTER III.

THE DYEING, BLEACHING, AND RESTORATION OF IVORY.

Ivory may be dyed in various colours. The Crimson Red colour commonly seen is given by dipping the ivory for a short time into a mordant of nitromuriate of tin, and then plunging it into a bath of Brazil wood, cochineal, or a mixture of those substances. A scarlet tint is produced by lac dye, and if the scarlet ivory be plunged into a solution of potash, it changes to cherry red. A yellow dye may be produced by giving the ivory the tin mordant and digesting it at a gentle heat in a clear decoction of fustic. A black dye may be

given by boiling the ivory in a strained decoction of logwood, and then steeping it in a solution of red sulphate, or red acetate of iron. In dyeing ivory the surface should not be polished until the dye is set. As soon as the ivory is taken out of the hot-dye bath, it should be plunged in cold water to prevent the chance of cracking; and should the dye appear in dark spots or patches, they should be rubbed down with chalk, and the ivory be dyed once more.

When ivory has become discoloured it is not easy to bleach it. Some recommend that it be scrubbed with sand and water, but this is evidently inapplicable to works delicately carved by hand or at the lathe. Articles in ivory, which have suffered partial decomposition by exposure to air and moisture, have been restored by boiling them in a solution of gelatine. Such was the case with some works in ivory sent from Nineveh to England by the late Sir Henry Austin Layard. They were in a state of decomposition, and the method of restoring them was suggested by Professor Owen. An attempt has been made to render ivory flexible by removing a portion of its lime by the action of hydro-chloric acid. This plan has been adopted by a surgical instrument-maker, M. Charriere of Paris, who first gives the pieces of ivory their required form and polish, then steeps them in dilute acid, until they have become supple and elastic, after which they are taken out and dried, when they again become hard, but the flexibility can be restored by surrounding the ivory instruments with wet linen, or by placing wet sponges in the cavities of the pieces.

CHAPTER IV.

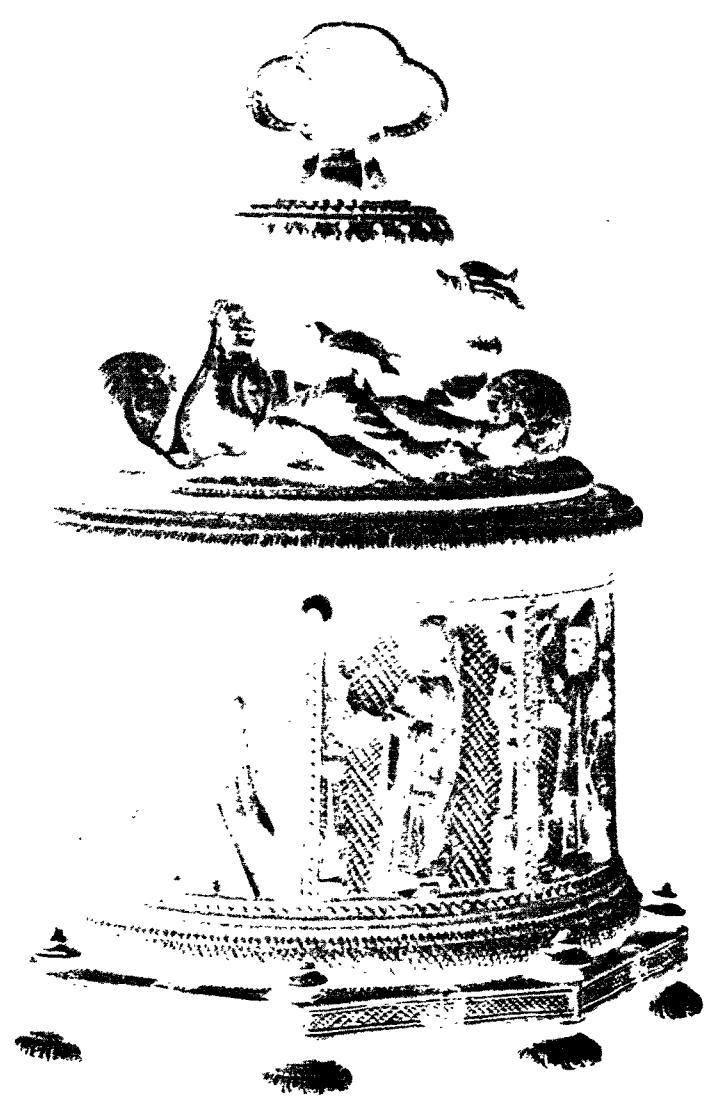
IVORY CARVING AND THE PRINCIPAL OBJECTS FOR WHICH IVORY IS USED.

In India ivory has been used since the earliest times for the production of useful and ornamental objects. Articles made from a single piece have necessarily been limited in size to the width and length of the tusk, therefore ivory drinking cups and large vessels intended to hold liquid are rarely met with. The principal objects cut from solid ivory are small round boxes for holding powder or sweetmeats, the handles of swords, daggers and knives, brushes and combs, small figures, balls, chessmen, buttons, &c.

Large articles are either built up from numerous small pieces jointed together or are firstly made of wood which is cased or sheathed with plates of ivory fixed with cement or by means of rivets. Plates Nos. 1a and 1b, and 2 are specimens of each of the above-mentioned uses of ivory.

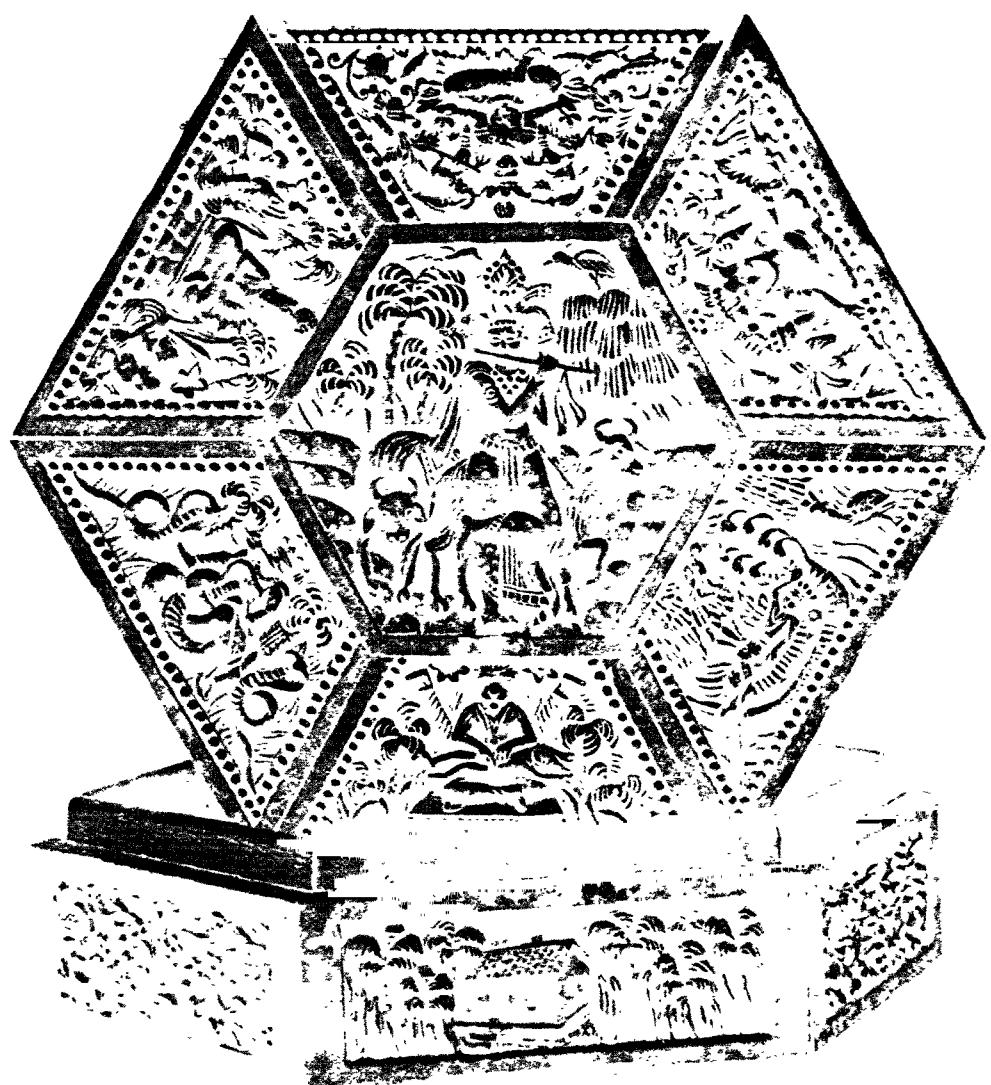
Nos. 1a and 1b represent two views of a box made entirely of small pieces of ivory jointed together at each angle of the octagon, while the top is carved from a solid piece. This specimen is from the collection in the Museum of the Bombay School of Art, and was made at Bhúj.

It is one of the best examples of the art of ivory carving produced in Western India that has come under the author's notice, and No. 2 also from the Museum of the Bombay School of Art is a box made of wood encased in ivory. It is also a very fair specimen of this use of the material. It must be confessed that compared with the work produced during the middle ages in











Europe and in Japan before 1860, the old Indian work is childish in its technique and poor in design. It has none of the exquisite feeling and beauty of workmanship of the former, nor the complete craftsmanship, humour and insight of the latter. As the Indian workmanship has since steadily deteriorated, its exhibition upon ivory certainly does not justify the slaughter of the intelligent animals who produce it, in fact the crude and incoherent scratchings of modern workers would not be so glaring in their incompetence, nor so obviously misplaced were they practised upon ordinary bone instead of upon this more precious material.

CHAPTER V.

“OF THE TECHNIQUE OF IVORY CARVING.”

Ivory has an extremely hard surface and is very brittle and at the same time is close-grained. It is therefore in many respects an ideal material for use in the lathe where the turner knows his business, but in carving it has to be treated very differently from wood. Being so extremely hard and brittle it is necessary, in order to carve it, to render it softer, by artificial means while the work is being carried on, but at the same time not to permanently alter its character.

In order to effect this, the ivory is wrapped in wet cloths, in which it is allowed to remain for several days, the cloths being continually re-damped. When this period has passed the ivory will be in the desired condition for carving and will be found to cut with a consistency more like the softness of cheese or wax than the brittleness of bone. All the deep parts of the back-ground are drilled out to the required depth with small drills such as are used by goldsmiths, set in a revolving handle to which motion is given by means of a bow worked with the operator's right hand, while the drill handle is held with his left. The fretted portions of the design, if such there be, are also first drilled through, and then cut into shape with a small fret-saw. In consequence of the natural brittleness of ivory, great care and judgment have to be exercised in deciding the sequence of the work when parts are fretted and parts carved in order to prevent the former parts from breaking away under the inevitable strain of the carver's tool. There is a modern tool which has been adapted to ivory carving in England by Professor Herkomer, R. A., and which the author has also used. It is the small revolving burr or drill upon a flexible shaft, used by dentists for preparing teeth for stopping, worked either by the foot or by an electric motor. The great speed at which it works, between 3,000 and 4,000 revolutions a minute, reduces the amount of pressure necessary to obtain a cut, to a minimum, and the great variety of drills, from those measuring one-eighth of an inch in diameter to those with points as fine as a needle, enable the operator to obtain not only all the effects possible with a graver and chisel, but many, especially in the way of under-cutting, quite out of the range of those tools. When this machine is worked by an electric motor which gives it a steady speed of over 4,000 revolutions, not easily conveyed by a foot-treadle, it is an ideal implement in the artist's hand for ivory carving, and is infinitely more expeditious than any of the older methods.

CHAPTER VI.

THE PRESENT CENTRES OF IVORY WORK AND CONDITION OF THE
INDUSTRY IN WESTERN INDIA.

Ivory carving in Western India cannot now be said to exist at all as an industry. Inquiry in nearly every Collectorate, district, and large town in the Bombay Presidency elicited the information that only in those named below is any trade in ivory goods carried on and in each the demand is purely local. In none can the work be dignified by the title of carving as the accounts which follow will amply testify.

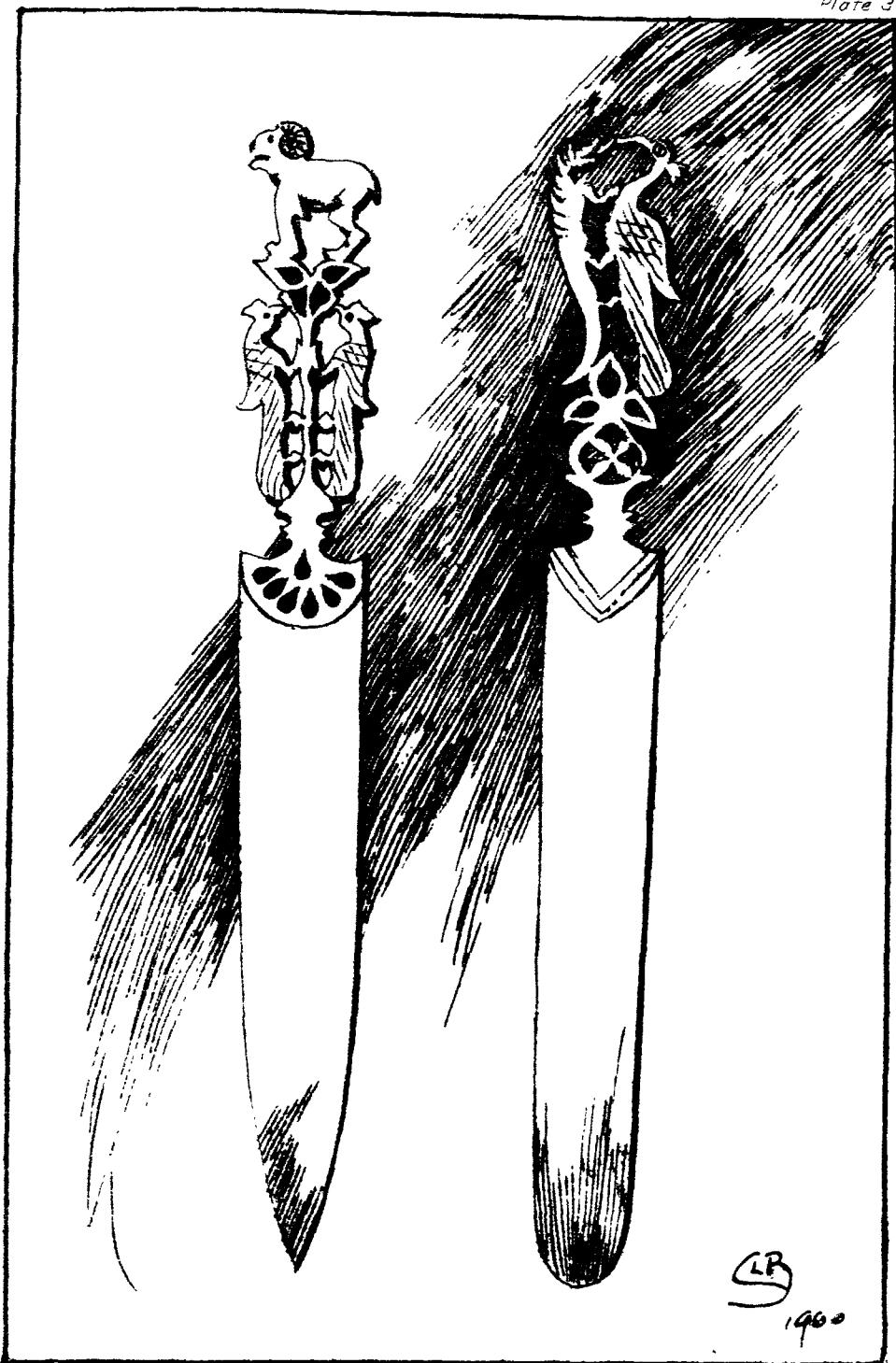
H A' L A.

In Hala there is a certain amount of ivory working, and a good idea of the local skill can be obtained at a shop in Hyderabad. The owner, Asharandass, a Sindhi Bania, has a small Raja's car drawn by two bullocks on a stand. He did not know where it had come from as he had bought it, but he believed it must have come from Jaipur. This is mentioned chiefly to draw a contrast between it and his own work. The bullocks are very good in modelling and in proportion; they are about $3\frac{1}{2}$ inches long, and are not conventional in execution, but are evidently an attempt to reproduce nature, probably from the artist's memory, and not from a living object. The Sindhi carver, on the other hand, when not copying, restricted himself to fashioning purely conventional representations of birds or animals suggesting monkeys or storks, upon the tops of penholders and implements like paper-knives, but used it is said for smoothing the hair on the temples under the turban. In another shop, that of Isar, the end of an ear-cleaner was fashioned roughly into a human hand showing a somewhat higher degree of skill than the monkeys or storks. Similar wares are to be seen in Tando Alahyar. Both Banias, Isar and Asharandass, seem to take their ideas from foreign objects of a much higher order of work, and some of which they had actually copied, and not from nature, as there are no monkeys in Sind. A few other Sindhi workmen appear to know these patterns and reproduce them from memory. The workmanship is always and the ideas are sometimes very coarse and vulgar. Besides the bullock-car which he had not attempted to copy, Asharandass had made accurate copies of two figures of men dressed like English Puritans, but the work was quite simple, and the execution about as good as that of the figures in a child's Noah's ark.

In Tando Alahyar very pretty ornamented hair-smoothers were formerly made, but the industry has died out. A workman here was recently asked to make a Hindu idol, and about three weeks later, he produced a figure on a stand, about 4 inches high, of a man holding an umbrella above his head, with a dog at his feet. He wore a kind of Henry VIII. hat, and a coat drawn in by a belt, and reaching his knees. The figure was one inch through at the deepest part. The work was very plain and the arm not holding the umbrella was akimbo, and had been hollowed away to an absurd extent through unskilfulness. As the whole thing was carved in several pieces, the man, the dog, and the umbrella were detachable. The eyes and lips of the man were coloured very coarsely.

PAPER KNIVES FROM HYDERABAD, SIND

Plate 3

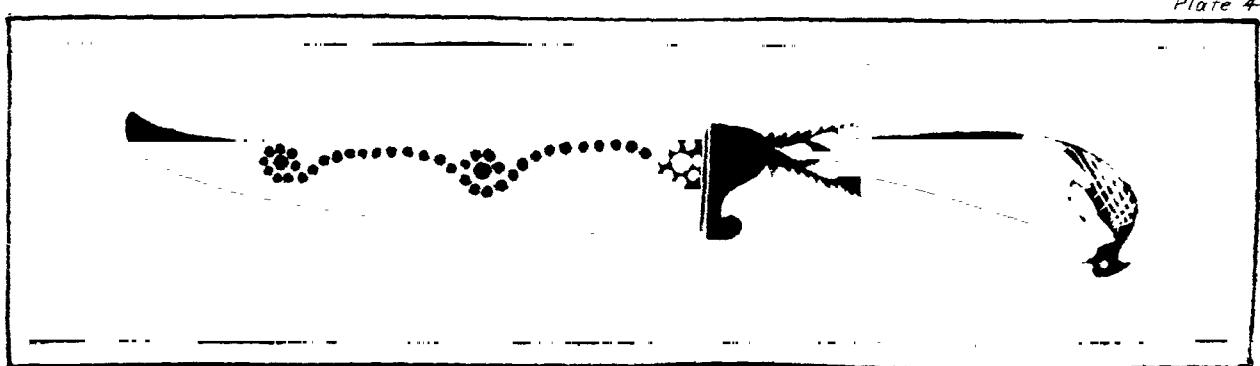


Govt Photocurico Office, Poona, 1900.

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PAPER KNIFE FROM HYDERABAD, SIND

Plate 4



Govt. Photographic Office, Purna, 1900.

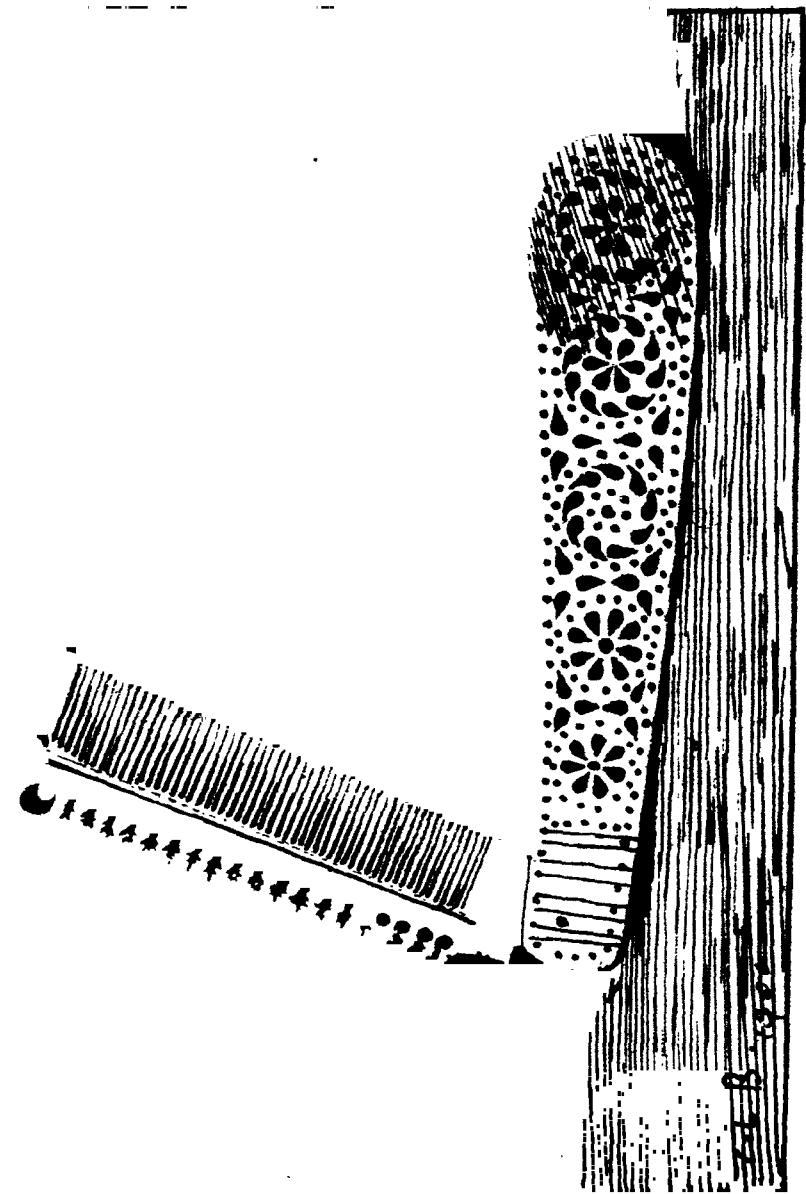
SPOONS FOR ADDING WATER TO INK FROM HYDERABAD, SIND.

Plate 5



Pocket Comb from HYDERABAD, SINDH

Plate 6



Govt Photocolor: Office Pooni, 1940.

Where the workman got his pattern from, or whether he evolved it from his memory, or, from what but for the lack of any suggestion of its presence, might otherwise be termed his imagination, did not appear. The demand for ivory carving is at present so small, that it is doubtful if a really good workman could get a living, but whether the poor demand is in consequence of the inferior quality of the work or *vice versa*, is difficult to decide.

Coloured and dyed ivory is produced in Hyderabad; and Gangu Sindhi, Bania, makes imitations of red chillies with green stalks, certain bulbous vegetables dyed green, and flowers dyed red, which are however not copied from nature. The red dye was extracted from babul trees, the green was imported: whether they were "fast" was not ascertainable.

The rest of the work in this division is turned on the lathe. The ivory worker's chief business is in plain armlets, and any carving of figures is more an amusement than business. A certain Nur Mahomedshah of Hila turns small plain studs, in the heads of which he puts glass-beads, and also turns rather neat egg-cup-like objects with lids. These he ornaments with a simple but pretty wreath-like device in red and black.

The men referred to above are the only ones known to carve in ivory, but a very considerable trade is done in the plain armlets, there being numerous ivory shops in all towns of any size, whose sole business is the production of these rings. The women cover their arms with them till they look as though they were encased in ivory.

In conclusion, the work here produced, whenever it attempts to go beyond the plainest of turning, is either a debased copy of an object foreign to Sind; or when the product solely of the workman's mind, is upon the artistic level of the cheapest German toy, with an added vulgarity in colour, expression, or suggestion of its own.

K A' N A R A.

There is no such industry as "ivory carving" regularly carried on in this district. There are, however, a few "Gudgars" whose chief calling is carving on sandalwood and painting, who at times carve ivory also. They are found in Kumta, Banvási, Siddápur, Bilgi, and a few other places in this district. They generally work on ivory, to order, and seldom offer articles for sale, except such as have been condemned by the person who ordered them. The articles made are generally small boxes, combs, sets of chessmen, images, paper-cutters, card-cases and other fancy articles.

Ivory is not commonly to be had in this district. It is imported from Bombay or Mysore. It generally costs from Rs. 2 to Rs. 4 for a seer of 24 tolas, and when worked upon the articles are sold for an amount varying from Rs. 10 to Rs. 50 according to workmanship. The average wages of a Gudgar for such work are about annas thirteen per day.

K A R A C H I.

Ivory carving is in this division carried on in the town of Sehwán only.

The trade consists almost entirely in the manufacture of sets of plain arm rings called "Bahin" when they are full-sized and "Gabha" when they are for children.

Ivory is usually purchased by private individuals from ivory traders at about Rs. 21 per seer. It is then handed over to the ivory carvers, who charge about annas 5 per seer for their labour in making these rings. The ivory carvers also keep "Gabhas" ready made which they sell at the rate of about 6 pies for each single ring or "Churo."

No other articles are ordinarily made, but buttons, dice, and handles of knives can be made to order, as also chessmen and pieces for the game of "Chopar."

The carving is always of the simplest kind, and has no artistic merit to speak of.

P O O N A.

The following is an account of the founding of the ivory industry of Poona.

Savai Madhavrao Peshwa (1780—1795), a youth whom Nana Fadnavis' restraints drove to suicide, found in the sacred books a law against Brahmin women using metal hair combs. It was therefore decreed that combs should be of ivory. To supply the demand for ivory combs which sprang up in consequence, one Audutrao Dhandarpalkar came from Násik and opened the first ivory comb factory in Poona City. His example was followed by Abaji Ava of the carpenter caste. The family of Audutrao cannot be traced and is said to have died out. The original carpenters have also left Poona, and again taken to wood-cutting. The present ivory comb-makers are the descendants of the Kunbi servants of the original workers. They number about fifteen and keep five workshops opposite the temple of Ganpati in Kasba ward. They are a quick people, speak Maráthi, live in their own one-storeyed houses, occasionally eat flesh and dress like ordinary Kunbi Maráthas. Comb-making is easy to learn. Many Kunbis would have taken to the craft, if it had offered a fair chance of making a living, but for many years, owing to the competition of cheap foreign bone combs, the industry has been depressed. Within the last ten years four shops have been closed and those workmen who are left, though above want, are poor. The present small ivory comb industry will probably continue, unless it is killed by the importation of European ivory goods. Bráhmin and other high caste Hindu women think bone combs impure, and three ivory combs always form part of the 'vayan' or bride's outfit.

Comb-makers work from seven to eleven and from two to sunset. They stop work on Kar, that is the day following Mahásankrant in January and on Nágpanchmi in August. Their women and children give them no help. During the marriage season between October and May, the demand is brisk, and sometimes one or two assistants are employed to help in doing the rougher parts of the work. The assistant is paid 8s. to 14s. (Rs. 4—7) a month according to the nature and quality of his work. The average monthly income of a comb-maker varies from £1 to £1 10s. (Rs. 15—22½). As ivory is very costly, ranging from about 8s. to about 11s. the pound (Rs. 150—200 the 38 lbs. *man*), the money required for buying it has to be borrowed. The usual rate of

interest paid is one per cent. a month. The advances are generally made by a moneylender named Jipa Márwári, in whose hands the whole industry practically lies. In addition to interest he charges $1\frac{1}{4}$ to $1\frac{1}{2}$ per cent. as commission on the ivory he brings from Bombay. The workmen have to sell the articles they make on their own account and to pay the standing balance, including interest and commission, to the Márwári moneylender. What they are able to keep back is just sufficient to maintain themselves and their families. All are indebted to the Márwári. The appliances of a comb-maker are similar to those of an ordinary carpenter, only a little finer. Each shop requires five to six saws of different sizes worth 9d. to 1s. (9 to 12 annas); half a dozen files worth 6d. to $7\frac{1}{2}$ d. (6 to $7\frac{1}{2}$ annas), four or five borers worth 3d. (3 annas) each; half a dozen vices each worth 10s. to £1 10s. (Rs. $7\frac{1}{2}$ — $22\frac{1}{2}$); a vâkas or adze worth 2s. (Rs. $1\frac{1}{2}$); a khatávne worth $1\frac{1}{2}$ d. ($1\frac{1}{2}$ annas); and a pair of compasses worth 6d. (6 annas).

When the ivory is brought from the Márwári's shop, after he has weighed it, and entered the price in his account-book, it is steeped in water for two or three days. It is then cut into pieces of the required size and sawn through, keeping it vertical by holding it in the vice. It is then filed, rubbed, and polished. Sometimes the ends and sides are decorated with carvings, and the plain surface is broken by tracing on it a few curved and straight lines. Combs for the use of women are rectangular, and have a double set of teeth, while men's combs are crescent-shaped and have only one set of teeth. The small pieces of ivory left over in cutting out pieces for combs are used in making dice. The price of a comb ranges from 6 annas to Rs. $1\frac{1}{2}$, according to the size, thickness, and workmanship of each. The combs and dice are sold in the workshops by the workers on their own account. Their only customers are high class Hindus. Other classes use either wood combs or foreign horn combs."

To this account it is only necessary to add that the ivory used in the industry is brought from Bombay, and costs Rs. 12 to 15 per seer. Nowhere else in this district is ivory carving to be discovered. The economical reforms and changes which the Indian hand industries have undergone by virtue of their having been brought into close contact with the more efficient industrial system of Europe, have, it is clear, in this case, as in many others, reduced to a state bordering on extinction the hand manufacture of ivory combs in the Poona City. We have not perhaps any great cause to deplore the substitution of machine-made for hand-made combs, inasmuch as the former must necessarily be considerably cheaper, while it is doubtful whether the latter possess sufficient artistic superiority to counterbalance this obvious advantage. It is presumed that the scruples against the use of combs made of bone have long ago been met by the introduction of machine-made combs of ivory which are a common article of trade in this country.

SURAT.

In Surat no great demand exists for work in ivory, in consequence of such articles, whether for use or for ornament, being sold at higher prices than im-

ported goods of a superior class. A small trade in such articles, as are made, is carried on with Bombay and Madras.

The principal items of manufacture are—

(1) Bangles of ivory which are turned in different sizes, though the shape is the same for all. This is done on an ordinary wooden lathe, when they are either coloured deep red or are covered outside with thin sheets of gold or silver. The former are worn by women of almost all the lower classes of Hindus only. The prices of such bangles vary from Rs. 5 to 15, if simply made of ivory; but when covered with gold or silver, the prices exceed these in accordance with the quality and quantity of metal used.

There are a few Hinghratia or ornamental boxes used for preserving "Kankoo," a mixture of turmeric and carbonate of soda, or vermillion invariably employed by natives, especially the women, when engaged in sacred duties or marriage festivals. It is applied in a wet or dry condition to the arms, chest, ears and foreheads by means of the fingers or small round sticks. Even on ordinary days women of almost all the classes have "Chanlas" or small red circular spots or marks in the middle of their foreheads, which are not only taken as signs of good omen, but are considered to add to the beauty of their faces. This practice is, however, only followed by married or unmarried ladies and girls, while it is prohibited altogether to widows.

Snuff-boxes, buttons, dice (of different sizes), combs for dressing hair, paper-knives, English alphabets, small pictures carved in relief and ribbons for carved sandalwood boxes, &c. &c., are also prepared from ivory.

Amongst toys the following are made in Surat:—"Kayels" (Humming tops), "Gughras" (Jingling bells), chessboards, checkmates and "Chakardis," &c.

Some of the vegetable products such as radish, chilly, brinjal, hibiscus esculentus, &c. &c., are represented in a crude manner in ivory, no fixed price being charged, but depending upon the time and quality of the workmanship of the articles prepared.

In no other town or district in the Bombay Presidency is there any ivory carving practised. The industry may be considered, therefore, as approaching extinction, a result which will be hastened by the discovery in Europe of several artificial substitutes for ivory, which are free from some of the drawbacks found in that material. There is no prospect of a revival of the present industry, but on the contrary every likelihood of its more or less speedy death.

The author is indebted to the following officers for their reports on 'Ivory Carving,' supplied to him from their respective districts:—

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